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Pearl Cohen Zedek Latzer, LLP
1500 Broadway
12th Floor
New York, NY 10036

EXAMINER	
ANDERSON, DENISE R	

ART UNIT	PAPER NUMBER
1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/561,540	DA SILVA GONCALVES ET AL.	
	Examiner	Art Unit	
	Denise R. Anderson	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 June 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,12 and 13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12 and 13* is/are rejected.

7)☒ Claim(s) *8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Objections

2. Claims 1 and 3 were amended. The previous objections for minor informalities are withdrawn.

3. Claim 8 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claim recites the process is carried out in "a continuous or a batch mode." Since there are no other options other than a continuous or a batch mode, claim 8 fails to further limit claim 1 upon which it depends.

4. Applicant argues, "Applicants assert that claim 8 limits claim 1 by excluding a third option, *i.e.* the semi-continuous mode, which is different both from the continuous mode and from the batch mode." The objection is maintained. The suggestion is, in the context of the Specification, to explain what "semi-continuous mode" process would be covered by independent claim 1 but not by dependent claim 8.

Claim Rejections - 35 USC § 112

5. Claims 1-10 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite because claim 1, part c, recited "distilling the retentate . . . leading to a top stream rich in ethanol

and a bottom stream of dealcoholized permeate." The drawing shows the permeate stream 8 being distilled and not the retentate stream 7 as recited in the claim. The specification recites claim 1 exactly, in paragraphs 9-16. In the last office action, the examiner interpreted the claim to be in line with the drawing. Applicant amended claim 1, part c, to be in line with the drawing. As such, the previous rejections are withdrawn.

6. As in the last office action, claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites nanofiltration membranes and the specification states, in paragraph 7, that nanofiltration membranes are different from reverse osmosis membranes but does not state what the difference is such that one of ordinary skill in the art would know whether the membrane in question is an infringing nanofiltration membrane or a non-infringing reverse osmosis membrane. As the MPEP states at 2173.02, "If the language of the claim is such that a person of ordinary skill in the art could not interpret the metes and bounds of the claim so as to understand how to avoid infringement, a rejection of the claim under 35 U.S.C. 112, second paragraph, would be appropriate. See *Morton Int 'l, Inc. v. Cardinal Chem. Co.*, 5 F.3d 1464, 1470, 28 USPQ2d 1190, 1195 (Fed. Cir. 1993)."

7. In the patentability analysis below, it will be shown that Lee et al. anticipates the recited process. Lee et al. teaches the membrane characteristics and membrane materials that will work in that process. As such, the examiner interprets applicant's nanofiltration membrane to be disclosed by Lee et al.. Specifically, Lee et al. teaches membrane characteristics when it is stated, "Membranes that are now used for reverse osmosis (RO) are good candidates for use in this invention, because RO applications entail high transmembrane water fluxes of polar

permeants (e.g., water). Membranes that permit rapid water permeation usually will be significantly permeable to ethanol as well. Membranes which exhibit ethanol and/or water fluxes adequate for the present invention should be thin, nonporous, and may be derived from polymers that are crosslinked or uncrosslinked, glassy or rubbery, and water-swollen to various degrees." Lee et al., col. 32, lines 47-52. Note that the "polar permeates" would include salts, as well as water and ethanol. Furthermore, a polymeric membrane that is uncross-linked, rubbery, and water-swollen would facilitate salt transfer, as well at water and ethanol transfer.

8. Lee et al. further teaches materials for the membranes at col. 33, lines 41-52 when Lee et al. states, "In view of the above considerations, a number of membrane types may be useful for the selective removal of ethanol from alcoholic beverages including, but not limited to, various aliphatic and aromatic polyamides, polyureas, polyetherureas, polyimides, polyoxazolines, polyetheraminotriazine, regenerated cellulose, cellulose acetate, cellulose triacetate, crosslinked polyvinyl alcohol, polyacrylonitrile and its copolymers (these polymers being particularly resistant to ethanol swelling), polybenzimidazole, and polybenzimidazolone, hydrophilic crosslinked vinyl polymers and copolymers, and ion-exchange membranes with various counter ions."

9. In summary, Lee et al. will be shown to anticipate the claimed process in the patentability analysis, below. Regarding that process, Lee et al. further teaches membrane characteristics and materials that would allow one of ordinary skill in the art to determine if a given membrane would work. As such, Lee et al. discloses the claimed, but undefined, nanofiltration membrane.

10. The previous rejection of claim 7 for indefiniteness is withdrawn. Claim 7 was amended to define "a long cleaning time" to be "a cleaning time of 45 minutes."

Claim Rejections - 35 USC § 102

11. Claims 1, 2, 8, 10, 12, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. (US Patent No. 5,013,447, May 7, 1991).

12. The patentability analysis will begin with claim 1. In Figs. 6, 12, and 18, Lee et al. discloses a method "for manipulating the ethanol content in alcoholic beverages by selectively removing . . . water and ethanol in any desired proportion" while "minor components that contribute to the flavor and aroma of the beverages are substantially retained in the product beverage" but not totally retained. Lee et al., col. 10, lines 50-56. This is analogous to the recited process for the reduction of alcohol content of beverages.

13. Lee further discloses, "The present invention, in a specific embodiment, relates to a method comprising exposing one side of a membrane to a beverage and the other side of the membrane to a gas-phase extraction fluid, and equalizing the water activities in the beverage and throughout the gas-phase by adjusting the amount, pressure or temperature of the water vapor in the gas-phase extraction fluid. The process of this invention is referred to as vapor-arbitrated pervaporation." Lee et al., col. 11, lines 24-32.

14. Regarding the pervaporation process, Lee et al. refers to Fig. 6 and teaches, "A membrane unit comprises two flow compartments, one on each side of the membrane 15. Beverage 10 is fed to compartment A of the membrane unit, a gas-phase extraction fluid 31 comprising a mixture of non-condensable gas (such as air or nitrogen) and water vapor is fed to the other compartment B as a sweep stream. . . . The beverage emerges with a reduced alcoholic content 16. An alcohol recovery subsystem 39 separates the water and ethanol 40 from the non-condensable gas 37 in the gas-phase extraction fluid that emerges 32." Lee further teaches,

"Membranes that are now used for reverse osmosis (RO) are good candidates for use in this invention." Lee et al., col. 32, lines 47-48. As was discussed in the 112 rejections, these reverse osmosis membranes are interpreted to be the nanofiltration membranes recited in claim 1. Lee et al. discloses that, for Examples 1 and 2, "The membrane module is of a plate-and-frame modular construction." Lee et al., col. 34, lines 22-24. In other words, the flow is tangential across the face of the membrane. Lee et al. continues, "The alcoholic beverage may be processed at or near atmospheric pressure." Lee et al., col. 21, lines 20-21. This is less than the recited maximum 40 bar recited in claim 1, limitation (a). To recap, Lee et al. discloses circulating the beverage from a feed tank, pressurized at a maximum 40 bar, tangentially across a nanofiltration membrane, to obtain a retentate stream and a permeate stream, as recited in claim 1, limitation (a).

15. In Fig. 18, Lee et al. discloses circulating the beverage from the feed tank (feed liquid) to the nanofiltration membrane (membrane), across the nanofiltration membrane tangentially, and then returning the retentate stream to the feed tank. In other words, Lee et al. discloses claim 1, limitation (b), which recites the retentate is combined with the beverage to be processed in the feed tank.

16. In Fig. 12, Lee et al. discloses that the alcohol recovery subsystem 39 includes a still 59 (applicant's distillation unit 9). Lee further et al. teaches, "The alcoholic beverage may be processed at or near atmospheric pressure." Lee et al., col. 21, lines 20-21. This is the atmospheric or reduced pressure recited for the distilling step in claim 1, limitation (c). To recap, Lee et al. discloses the permeate stream (water and ethanol liquid stream 40) is distilled, at atmospheric or reduced pressure, into a top stream (ethanol vapor 57) rich in ethanol and a bottom stream (liquid water 37') of dealcoholized permeate, as recited in claim 1, limitation (c).

17. Lee et al. discloses that the dealcoholized permeate (water stream from applicant's distillation unit 9) is recombined with the retentate / beverage when Lee et al. teaches, for a hybrid reverse osmosis distillation process for alcohol reduction, "Permeate generated by reverse osmosis treatment of feed wine was vacuumed distilled to separate ethanol from the water, which was recycled back to the feed beverage." Lee et al., col. 5, lines 59-63. As such, Lee et al. discloses claim 1, limitation (d).

18. Lee et al. further teaches that "when exchanging part or most of the native water contained in the beverage . . . the water used for pre-dilution or reconstitution must be thoroughly purified so as to minimize introduction of foreign materials into the beverage." Lee et al., col. 4, lines 64-65 and col. 5, lines 8-10. As such, Lee et al. discloses adding purified water to totally or partially compensating for volume loss due to ethanol removal, as recited in claim 1, limitation (e).

19. In summary, Lee et al. anticipates independent claim 1.

20. The patentability analyses for dependent claims 2, 8, 10, 12, and 13 follow. Regarding claim 2, Lee et al. further discloses that the membrane is "derived from polymers that are crosslinked or uncrosslinked, glassy or rubbery, and water-swollen to various degrees." Lee et al., col. 32, lines 55-57. An uncrosslinked, rubbery, water-swollen polymeric membrane is adjusted to facilitate transfer of salts, as recited. In summary, Lee et al. anticipates claim 2.

21. As was stated above in the claim objections, claim 8 fails to further limit claim 1 upon which it depends. Therefore, Lee et al. anticipates claim 8.

22. Regarding claims 10 and 13, Lee et al. further discloses that the final product presents the same organoleptic characteristic of the original beverage [claim 10] when Lee et al. teaches, "The alcohol-reduced samples retain virtually all of the flavor and bouquet of the original wine." Lee et al., col. 34, lines 52-53. Lee et al. further teaches that the recited organoleptic characteristic include body, flavor, and aroma (aroma intensity and aromatic profile) [claim 13] when Lee et al. states, "In each case, ingredients some of which are volatile, that contribute to the flavor, aroma, body and even color of the starting liquid are substantially retained in the product liquid or beverage." Lee et al., col. 2, lines 2-6.

23. Regarding claim 12, Lee et al. further discloses that the beverage "is selected from the group consisting of wine, sparkling wine, whisky, brandy, sake, beer or a fermented fruit drink." Lee et al., Column 42, lines 14-16. This anticipates applicant's recited wine, beer, cider, and sake.

24. In summary, Lee et al. anticipates dependent claims 2, 8, 10, 12, and 13.

Claim Rejections - 35 USC § 103

25. Claims 3, 9, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US Patent No. 5,013,447, May 7, 1991) as applied to claim 1 above.

26. Lee et al. discloses the claimed invention and implies that ionic species are removed from the water produced by the distilling step (the recited dealcoholized permeate) when the beverage is reconstituted with native water. Specifically, Lee et al. teaches that "when exchanging part or most of the native water contained in the beverage . . . the water used for pre-dilution or reconstitution must be thoroughly purified." Lee et al., col. 4, lines 64-65 and col. 5, lines 8-10.

This purification would include removing ionic species from the water produced by the distilling step (the dealcoholized permeate), as recited in claim 3. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have removed the ionic species in the Lee et al. water from the distillation step (applicant's dealcoholized permeate) since it was known in the art that "when exchanging part or most of the native water contained in the beverage . . . the water used for pre-dilution or reconstitution must be thoroughly purified." Lee et al., col. 4, lines 64-65 and col. 5, lines 8-10.

27. Regarding claim 9, Lee et al. discloses the claimed invention except for explicitly teaching blending the original beverage with the processed beverage. However, Lee et al. further teaches that such blending is known in the art when Lee et al. discloses, "For example, Dziondziak, in U.S. Pat. No. 4,814,188, produced low-alcohol beer by conducting fermentation with an alcohol dehydrogenase-negative yeast mutant incapable of forming ethanol but capable of forming glycerol, then blended the product with normally produced beer," for the purpose of "controlling the ethanol content." Lee et al., col. 3, lines 18-23 and 1-2. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have blended the original beverage with the processed beverage since it was known in the fermented beverage art to do this for the purpose of "controlling the ethanol content." Lee et al., col. 3, lines 18-23 and 1-2.

28. Regarding claim 12, Lee et al. discloses the claimed invention except for explicitly teaching the mead beverage, which is a fermented honey and water beverage. Lee et al. teaches a method for "reducing the volume of an alcoholic beverage comprising at least two volatile solvents including an alcohol and water in which substantially any predetermined desired

concentrations of alcohol and water in an alcoholic beverage is provided, while preserving the flavor and aroma of the alcoholic beverage." Lee et al., claim 34, col. 41, lines 29-34. Lee et al. further teaches that such a method can be used for fermented beverages such as "wine, sparkling wine, whisky, brandy, sake, beer or a fermented fruit drink." Lee et al., claim 38, col. 42, lines 15-16. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the Lee et al. method to reduce the alcoholic content of mead because of the equivalence of mead to the fermented beverages of wine, beer, sake, and hard cider for their use as a fermented beverage feedstock in the ethanol reduction art and the selection of any of these known equivalents for ethanol reduction would be within the level of ordinary skill in the art.

29. In summary, Lee et al. discloses or suggests all limitations recited in claims 3, 9, and 12.

30. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US Patent No. 5,013,447, May 7, 1991) as applied to claim 1 above, and further in view of Galzy et al. (US. Patent No. 4,610,887, Sep. 9, 1986).

31. Lee et al. discloses the claimed invention except for the circulation of water at room temperature. Galzy et al. teaches that this is known in the context of "a process for treating fermented juices by reverse osmosis." Galzy et al., Abstract, lines 2-3. Specifically, Galzy et al. discloses "a planar reversed osmosis module" that is operated at $26^{O}C$ where membrane plugging is prevented by submitting the membrane "to a washing about every 24 hours." Galzy et al. col. 9, lines 6 and 10-11. Galzy et al. further teaches, "The washing consists of passing over the membrane slightly acidified water for 15 to 20 minutes at ambient pressure and at 60 bars, then

rinsing the module with water." Galzy et al., col. 9, lines 14-19. In Table 3, Galzy et al. discloses running the process for 70 hours in the last column on the right. As such, Galzy et al. discloses maintaining the membrane flux over a period of days by washing the membrane with water at room temperature once every 24 hours. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have circulated water at room temperature in the Lee et al. process as taught by Galzy et al., since Galzy et al. states at col. 9, line 14 that such a modification would be useful "to prevent plugging up of the membrane."

32. Lee, in view of Galzy et al., discloses or suggests all claim 4 limitations except for stating explicitly that the transmembrane flux was 90%. Galzy et al. teaches maintaining the membrane flux over a period of days by washing the membrane with water at room temperature once every 24 hours. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have regenerated the membrane to at least 90% flux recovery, since it has been held that where the general conditions of a claim are disclosed in the prior art (regenerating the membrane once daily for a period of days), discovering the optimum or workable ranges (regenerating the membrane to 90% flux recovery) involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

33. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US Patent No. 5,013,447, May 7, 1991) as applied to claim 1 above, in view of Galzy et al. (US. Patent No. 4,610,887, Sep. 9, 1986) for circulation of water at room temperature to clean the membrane, and further in view of Gan et al. (*J. of Membrane Science* 155 (1999) 277-289) for increasing the cleaning temperature, adding cleaning agents to the water, and controlling the pH.

34. As shown in the claim 4 patentability analysis, Lee et al., in view of Galzy et al. discloses the method with a cleaning procedure of circulating water at room temperature. In the context of beer filtration, Gan et al. discloses cleaning membranes "within the applied chemical cleaning temperature range of 20-80^{O}C and pH 1-13.5." Gan et al., Title; p. 279, § 2.1, ¶ 1, lines 6-7. In Table 1, Gan et al. discloses NaOH, at a 0.1 wt% (pH=9, as recited in claim 7) and at a 0.3 wt% (pH =10) was used to clean membranes at 40^{O}C and 60^{O}C (the 50-60 ^{O}C, as recited in claim 5). In Fig. 5, Gan et al. further teaches the recited 45 minutes of cleaning time recited in claim 7. In Fig. 1 on p. 279, Gan et al. discloses computer control of the process. Gan et al. further teaches that "the complete cleaning time, t_c, varied with cleaning chemicals" and that "[e]xtended cleaning beyond t_c had minimal effect and should be avoided for economic considerations and longer membrane life." Gat et al., p. 282, § 3.2.1, ¶ 1, lines 3-6. Finally, As such, Gan et al. discloses a water circulation temperature of between 50-60^{O}C [claim 5], aqueous solutions of weak bases with pH control between 8 and 11 as a function of cleaning time [claim 6], a cleaning solution of pH 9 [claim 7] and a cleaning time of 45 minutes [claim 7]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have included, in the Lee et al. process, the cleaning cycle limitations recited in claims 5-7, as taught by Gan et al., since Gan et al. states in the Title, that such modifications would be useful for cleaning membranes in a beer filtration process.

Response to Arguments

35. Applicant's arguments filed June 25, 2009 have been fully considered but they are not persuasive.

36. Applicant's arguments are listed below with the examiner's response after each argument.

a. Claim 1 recites a nanofiltration membrane. Lee et al. teaches a reverse osmosis membrane as an example of a membrane that would work. Applicant argues that nanofiltration membranes are distinguished from reverse osmosis membranes and, therefore, claim 1 is patentable. Specifically, applicant argues, "[B]oth nanofiltration membranes and reverse osmosis membranes are both terms that are well known in the art, so that a person of ordinary skill would know the difference between the two." Applicant further argues, "[N]anofiltrations membranes *have larger pores than* reverse osmosis membrane, and therefore, an artisan would be able to differentiate the two. Further, as mentioned in the specification, reverse osmosis membranes usually require very high pressures, generally higher than 40 bar (page 3, lines 1-3). In contrast, the pressure required for the nanofiltration separations process of claims 1-10 is up to 40bar."

The examiner responds as in the 112 rejection above, paragraphs 6-9. To recap, claim 1 recites nanofiltration membranes and the Specification states, in paragraph 7, that nanofiltration membranes are different from reverse osmosis membranes but does not state what the difference is such that one of ordinary skill in the art would know whether the membrane in question is an infringing nanofiltration membrane or a non-infringing reverse osmosis membrane.

Applicant has offered pore size as the way one of ordinary skill in the art would differentiate between the two membranes. As a measure of pore size, applicant states

that reverse osmosis membranes operate at pressures over 40 bar and applicant is claiming "up to 40 bar." Such a test of pore size is not definite enough to guide one of ordinary skill in the art in differentiating between an infringing nanofiltration membrane and non-infringing reverse osmosis membrane.

Returning to the patentability analysis above, Lee et al. was shown to anticipate the claimed process. Lee et al. further teaches membrane characteristics and materials that would allow one of ordinary skill in the art to determine if a given membrane would work in that process. Lee et al., col. 32, lines 47-52; col. 33, lines 41-52. As such, the examiner maintains that Lee et al. discloses the claimed, but undefined, nanofiltration membrane.

b. Regarding claim 1, applicant argues, "Lee *et al.* cannot teach or suggest the nanofiltration process of claim 1, which is substantially different from the pervaporation method used by Lee et al. because as is known to those familiar with the art, the nanofiltration separation methods are pressure mediated separations through nanofiltration membranes."" Applicant's Remarks, p. 8, lines 28-31. Applicant further argues, "As specifically detailed in Lee *et al.* (Section 2.1.6), col. 7, lines 35-46, pervaporation is a membrane mediated evaporation process, wherein the selectivity of the pervaporation is governed by the permselectivity of the membrane." Applicant's Remarks, p. 8, lines 24-26.

In other words, applicant is arguing that while both processes include membranes, applicant's process is distinguished from that of the prior art because applicant's

membrane functions only by pressure-mediation while Lee et al.'s membrane functions by both pressure-mediation and permselectivity.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a pressure-mediated process without permselectivity of the membrane) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim 1 is shown below with the pressure limitation underlined. Claim 1, as recited, can be interpreted as either a pressure-mediated process or a pervaporation process with pressure-mediation and permselectivity. Lee et al. discloses both processes in the Background section to reduce alcoholic content of beverages -- along with fermentation control methods, evaporation methods, membrane distillation methods and solvent extraction with membrane extraction methods. Lee et al., col. 1, lines 23-31.

> *Claim 1. (Currently Amended) A process for the reduction of alcohol content of beverages comprising the steps of:*
>
> a. *circulating the beverage from a feed tank, <u>pressurized at a maximum 40 bar</u>* (40 atm, 580 psi)*, tangentially to a nanofiltration (NF) membrane to obtain two streams: i. one of retentate that does not cross the nanofiltration (NF) membrane, ii. one of permeate that*

crosses the nanofiltration (NF) membrane and is composed of water, ethanol and salts;

b. *recombining the retentate in the feed tank with the beverage to be processed;*

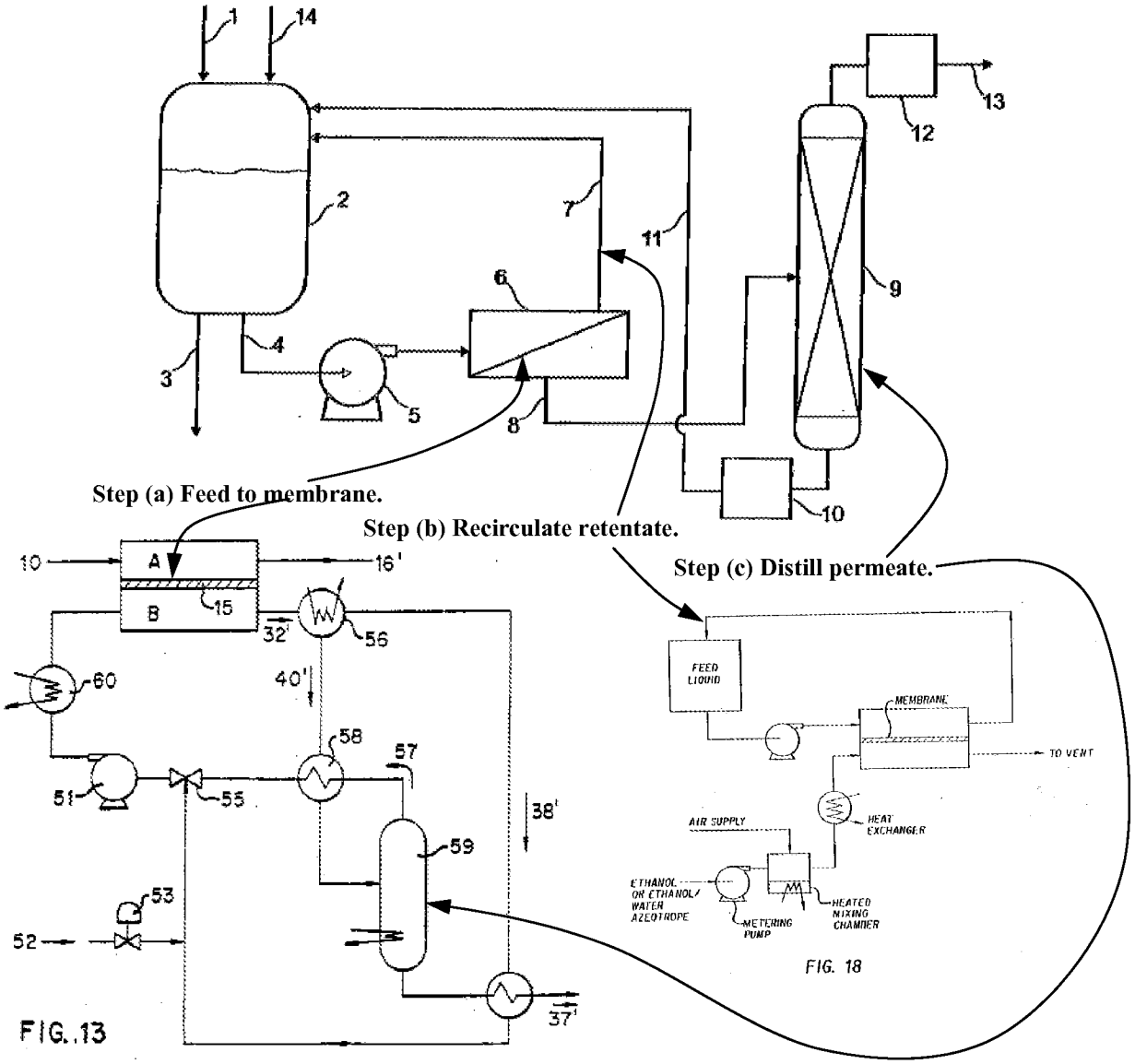
c. *distilling the permeate retentate, at atmospheric or reduced pressure, leading to a top stream rich in ethanol and a bottom stream of dealcoholized permeate;*

d. *recombining the dealcoholized permeate in the feed tank with the retentate/beverage;*

e. *totally, or partially compensating for the volume loss due to the removal of ethanol by the addition of purified water.*

Applicant's process is shown below and compared to that of Lee et al. for steps (a)-(c). Steps (d) and (e) are disclosed by Lee et al., as discussed afterwards.

Specification Fig. 1 Compared to Lee et al., Figs. 13 and 18
Claim 1, steps (a) – (c) disclosed.



Regarding step (d), Lee et al. discloses that the dealcoholized permeate (water stream from applicant's distillation unit 9) is recombined with the retentate / beverage when Lee et al. teaches, for a hybrid reverse osmosis distillation process for alcohol reduction, “Permeate generated by reverse osmosis treatment of feed wine was

vacuumed distilled to separate ethanol from the water, which was recycled back to the feed beverage." Lee et al., col. 5, lines 59-63. As such, Lee et al. discloses claim 1, step (d).

Regarding step (e), Lee et al. further teaches that "when exchanging part or most of the native water contained in the beverage . . . the water used for pre-dilution or reconstitution must be thoroughly purified so as to minimize introduction of foreign materials into the beverage." Lee et al., col. 4, lines 64-65 and col. 5, lines 8-10. As such, Lee et al. discloses adding purified water to totally or partially compensating for volume loss due to ethanol removal, as recited in claim 1, step (e).

In summary, applicant is arguing that while both processes include membranes, applicant's process is distinguished from that of the prior art because applicant's membrane functions only by pressure-mediation while Lee et al.'s membrane functions by both pressure-mediation and permselectivity. The examiner responded with two points. First, claim 1 does not distinguish between the two processes. Second, as shown in the above patentability analysis above and recapped here, Lee et al. anticipates claim 1. As such, the rejection is maintained.

Conclusion

37. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

38. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

39. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise R. Anderson whose telephone number is (571)270-3166. The examiner can normally be reached on Monday through Thursday, from 8:00 am to 6:00 pm.

40. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter D. Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

41. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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/DRA/

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797